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Forests and Mental Health in South Africa: Panel Data Evidence

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Forests and Mental Health in South Africa: Panel Data Evidence

Dambala Gelo



FC, Bogota

23 November 2019

Some background

- Mental health constitutes 14% of the global burden of disease in 2007 (Prince, Patel, Saxena, Maj, Maselko, Phillips & Rahman 2007)
 - is among the leading burden of disease for adolescents (Baird, De Hoop & Ozler 2013), and is forecast to be the second highest cause of health disability by 2020 (Blas & Kurup 2010)
 - In South Africa, it ranges between thirteen and fifteen percent (Myer, Stein, Jackson, Herman, Seedat & Williams 2009, Plüddemann, Morojele, Myers, Townsend, Lombard, Williams, Carney & Nel 2014)

Introduction

- Large literature exist unpacking the link between social transfer and education on one and improved physical health outcomes such as child nutrition, health, and development, and reduced child labour and household poverty on other
- But the potential link between green environment (urban forests, green urban open space) and mental health have not been ascertained both in South African and many other

Data

■ In this project, we will use a nationally representative panel data of South Africa to uncover this link

- National Income Dynamics Survey (NIDS) data
- As opposed to most survey, which usually use simple psychometric scales, NIDS included a battery of questions that allow the calculation of a depression index.
- The NIDS collects data on the Center for Epidemiological Studies Short Depression Scale (CES-D 10)

Data

- CES-D 10 is short self-reported scale which serves as a screening instrument to indicate the presence and severity of depression in a survey respondent (Radloff 1977)
- It ask questions about mental health without explicitly mentioning the names of any psychiatric illnesses
- This is important in the South African context, where high levels of stigma surrounding mental illness exist in many communities (Sorsdahl & Stein 2010, Hugo et al. 2003)

Data

- The NIDS also contains other measures of well-being;
 - life satisfaction, happiness, self-perceived health, and optimism
 - Rich set of information on socio-economic characteristics
 - Income, education, wealth, GPS location etc and several individual and community characteristics

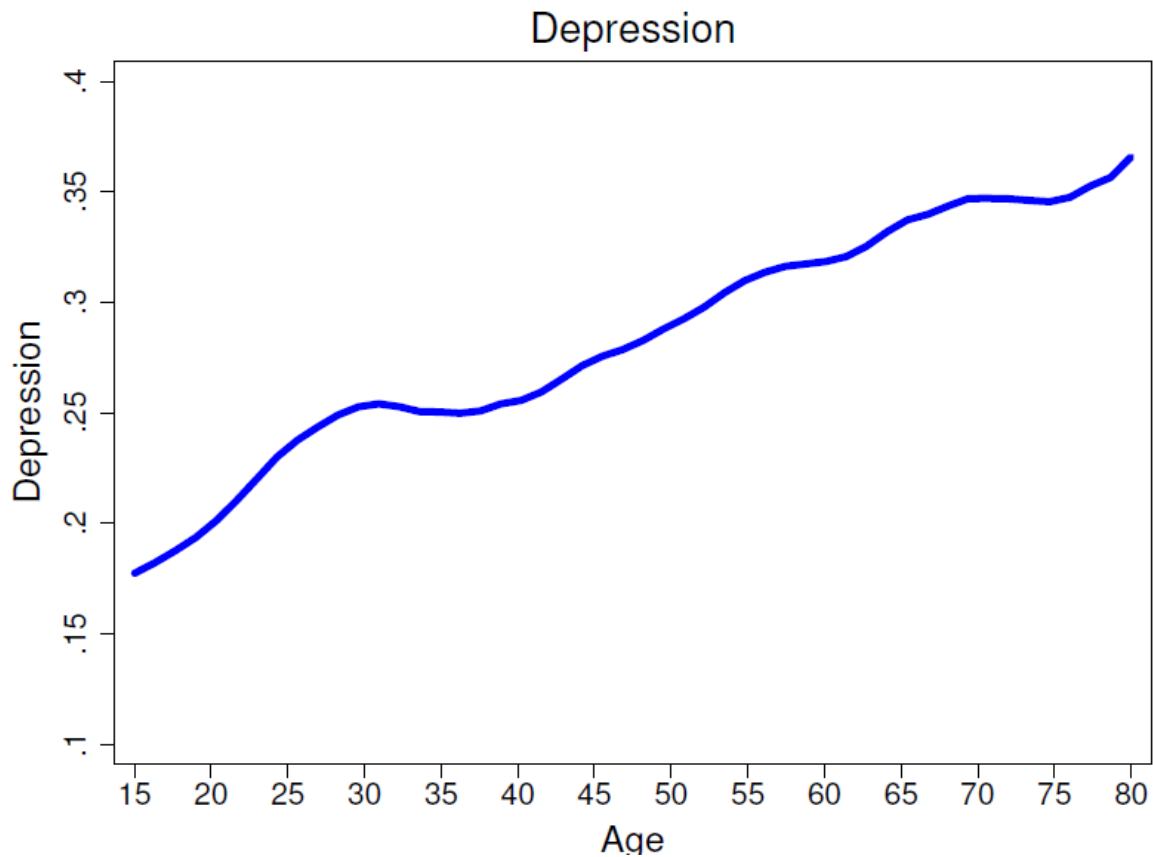
Data

- . We will geo-link the NIDS (NIDS) Secure Data with District Health Information System (DHIS) GPS and Service Provision by Facility files,3)
- This will allow us obtain information access to forests and green open spaces

Descriptive statistics

	Variable	N	Mean	SD	Min	Max
	depression	5759	18,23	4,11	4	39
	i_worth	5928	6,00E+05	5,29E+06	5,40E+05	3,50E+08
	religious	6074	0,93	0,25	0	1
	death_hh_member	6074	0,07	0,26	0	1
	theft_fire_destruction	6074	0,07	0,26	0	1
	Crop_failure	6074	0,02	0,14	0	1
	Any_neg	6074	0,01	0,11	0	1
	death_livestock	6074	0,04	0,19	0	1
	african	6074	0,7	0,46	0	1
	schooling	6074	0,8	0,4	0	1
	hhsz	6074	4,72	3,12	1	30
	female	6074	0,64	0,48	0	1
	lifesat	5763	0,14	0,34	0	1
	urban	6074	0,54	0,5	0	1
	Age	61 44	15.28		1	108

Descriptive statistics



Econometric framework contd

- In this project we will unpack the relationship between access to forests/ green urban space and mental health outcome in South Africa
- We will employ several methodological approaches;
 - We will use distance to the forest/green open spaces as treatment variables As this is continuous treatment variable, we will use dose response estimator (DRF) within generalized propensity score matching (GPSM)

Econometric framework

- However, slight misspecification of PSM models can result in substantial bias of estimated treatment effects (Imai and Ratkovic, 2013; 2014).
- Unknown true propensity score and the problem of model uncertainty
- we will employ covariate balance propensity score (CBPS) following Imai & Ratkovic (2014) to overcome these problems.
- CBPS is a different from standard PSP in that it models treatment assignment while optimizing the covariate balance
- CBPS optimizes the likelihood function under the constraint that the balancing condition is satisfied
- To address the model uncertainty problem, we will implement machine learning (Super-learner) of DRF

Econometrics

- We will also model of multi-valued treatment effect evaluation to isolate the effect of various mutually exclusive; access to forests, access green open space and access to both
- Specifically, we will implement efficient semi parametric estimation of multi-valued treatment effects estimator of Cattaneo (2009) under ignorability and non-ignorability identification assumptions.
- For robustness, we will also implement Bourguignon, Fournier, and Gurgand's (2007) multinomial selection model.



Thank You

